

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : **2000-086990**

(43)Date of publication of application : **28.03.2000**

---

(51)Int.CI.

**C09J123/22**

**C09J 5/02**

**C09J183/06**

**C09K 3/10**

---

(21)Application number : **10-258172**

(71)Applicant : **SUNSTAR ENG INC**

(22)Date of filing : **11.09.1998**

(72)Inventor : **FUKATSU SHUNSUKE**

**MURASE MASAAKI**

---

## (54) PRIMER COMPOSITION

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a primer composition capable of being especially applied even in the case of polyisobutylene-based sealing media used for constructions and capable of being generally used for various members to be constructed, such as window glass, coating surfaces and porous surfaces.

**SOLUTION:** This primer composition comprises (A) an organopolysiloxane resin containing hydroxyl groups or alkoxy groups which are bonded to silicon atoms, (B) an amino group-containing silane compound, (C) a isobutylene-based polymer containing alkoxy silyl groups, (D) a tin(IV) compound as a catalyst, and (E) an organic solvent. The components (A), (B) and (C) are preferably contained in amounts of 0.5-20 wt.%, 0.1-10 wt.% and 0.5-30 wt.% based on the total amount of the primer composition, respectively.

---

### LEGAL STATUS

[Date of request for examination] **09.11.2000**

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2000 Japan Patent Office

\* NOTICES \*

Japan Patent Office is not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

## DETAILED DESCRIPTION

---

### [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to a primer constituent and a primer constituent useful especially in more detail in the case of the polyisobutylene system sealing material used as a structural sealing material.

[0002]

[Description of the Prior Art] Although the silicone system sealing material is conventionally made in use in that it excels especially in endurance and weatherability as a structural sealing material, a polyisobutylene system sealing material is attracting attention as what has the performance which is equal to this recently. By the way, generally as a primer of a structural sealing material, it is roughly divided into a silane system primer and an urethane system primer. A deer is carried out, and especially, since the influence of the ultraviolet rays near an adhesion interface can be considered, construction of the windowpane periphery section requires a weathering advanced adhesive property in a primer. For this reason, the present condition is that the silane system primer which makes a principal component the silicone system compound which is excellent in weatherability is used (refer to JP,2-219885,A). However, by this silane system primer, when it replaces with the above-mentioned silicone system sealing material and a polyisobutylene system sealing material is used, since a polyisobutylene system sealing material differs [ the silicone system compound ] from polarity, a good adhesive property is not necessarily acquired.

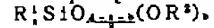
[0003] On the other hand, even if it applies various kinds of painted surfaces and the primer for windowpanes, since the prevention ability of water osmosis in an adhesion interface is low, the primer only for porosity sides is needed [ it sinks into the above-mentioned porosity side, or ], when a constructed member has a porosity side separately. therefore, construction-ed -- the coating part injury of the primer from which a kind differs in the joint used as the tie in of these members when the kinds of member differ -- it is required and the difficulty of a construction process is not avoided

[0004]

[Means for Solving the Problem] Then, also in the case of the above-mentioned polyisobutylene system sealing material, this invention persons can apply. And the place which advanced examination wholeheartedly in order to offer the general-purpose primer which can contribute to a good adhesive (adhesion weatherability is also included) manifestation also to the constructed member of a windowpane, a painted surface, and a porosity side, It finds out that these organic-solvent solutions that added the catalyst to three sorts of specific primer components can use it as a general-purpose primer of the expected purpose, and came to complete this invention.

[0005] That is, this invention offers a tin (IV) compound and the primer constituent characterized by consisting of (E) organic solvent as the hydroxyl group combined with (A) silicon atom or an alkoxy-group content organopolysiloxane resin, (B) amino-group content silane compound, (C) alkoxy silyl machine content isobutylene system polymer, and a (D) catalyst.

[0006] For the hydroxyl group combined with the above-mentioned silicon atom in this invention or an alkoxy-group content organopolysiloxane resin (A), and (an organopolysiloxane resin only being called hereafter), the average unit is formula:, for example. [Formula 1]

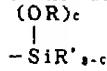


the inside of [formula, and R1 -- a monovalent hydrocarbon radical (for example, alkyl group; vinyls, such as a methyl, ethyl, and a propyl, --) thing; R2 which replaced ARUKENIRU machine [, such as an allyl compound, ]; and these hydrogen atoms by the halogen or the cyano group -- a hydrogen atom or an alkyl group (a methyl --) ethyl -- a propyl -- etc. --; -- a -- 0.8 - 1.8 --; -- and -- b -- one -- a molecule -- inside -- silicon -- an atom -- having joined together -- a hydroxyl group -- or -- an alkoxy group -- a number -- one -- a piece -- more than -- becoming -- a value -- it is -- ] -- being shown -- having -- a thing -- it is -- Usually, one sort of each of the crawl silane or alkoxy silane which has 0.8-1.8 monovalent hydrocarbon radicals per silicon atom, or two or more sorts of mixture are understood an added water part under mixture of water or water, and an organic solvent. It can manufacture by removing a hydrochloric acid, alcohol, etc. which carry out a byproduction.

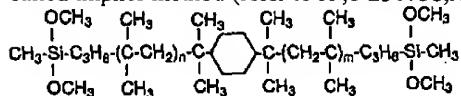
[0007] As the above-mentioned amino-group content silane compound (B) in this invention, aminomethyl trimethoxysilane, aminomethyl triethoxysilane, gamma-aminopropyl trimethoxysilane, gamma-aminopropyl triethoxysilane, gamma-aminopropyl thoria MINOKISHI silane, gamma-(2-aminoethyl) aminopropyl trimethoxysilane, etc. are mentioned, for example.

[0008] It is formula: to the molecule both ends a principal chain frame is constituted per isobutylene at least with the

above-mentioned alkoxy silyl machine content isobutylene system polymer (C) in this invention, and (isobutylene system polymer only being called hereafter), and [the unit of an isobutylene and the monomers (for example, the olefin of carbon numbers 4-12, vinyl ether, an aromatic vinyl compound, vinyl silanes, and arylsilane etc.) which may be copolymerized may be included in addition to the isobutylene unit as long as it requires]. [Formula 2]



inside of [formula, R, and R' -- the same or the alkoxy silyl machine of ] whose low-grade alkyl; and c of carbon numbers 1-5 it differs and are the integer of 1-3 -- containing -- desirable -- molecular weight 1000-40000 -- the shape of an ordinary temperature wax, and hyperviscosity -- the designation of the liquefied thing can be carried out and it can manufacture by using all the end organic-functions type isobutylene system polymer generally obtained by the cationic polymerization method called iniphor method (refer to JP,8-231758,A) As typical commercial elegance, it is a formula. [Formula 3]



The Kanegafuchi Chemical Industry Co., Ltd. "EPION" series which has the chemical structure of [5-400, and m of the inside of a formula and n are 5-400] is illustrated. [ of make ]

[0009] As a tin (IV) compound as the above-mentioned catalyst (D) in this invention, dioctyl acid tin, dibutyltin dilaurate, dibutyltin screw acetyl acetate, etc. are mentioned, for example. Furthermore, it is desirable to select so that organic titanic-acid ester (for example, titanium chelate compounds, such as tetrapod isopropyl titanate, tetrapod n-butyl titanates and these partial hydrolysis condensates, titanium diisopropyl BISUASECHIRU acetate, and titanium diisopropyl bis-ethylacetacetate etc.) may be used together to this tin (IV) compound and the weight ratio of a tin (IV) compound and organic titanic-acid ester may be set to 9:1-3:7 in this case. Although it compares with tin (IV) compound independent use and adhesive improvement is found by combined use of organic titanic-acid ester, if organic titanic-acid ester is used together exceeding the upper limit of the above-mentioned range, the adhesive property to a porosity side will fall.

[0010] as the above-mentioned organic solvent (E) in this invention, benzene, toluene, a xylene, a methanol, ethanol, isopropyl alcohol, a butanol, an ethylene glycol monomethyl ether, an acetone, a methyl ethyl ketone, a ligroin, ethyl acetate, a tetrahydrofuran, n-hexane, a heptane, a trichloroethylene, a par chloroethylene, etc. mention, for example -- having -- these one sort -- or two or more sorts are combined suitably and use is presented

[0011]

[Embodiments of the Invention] The primer constituent concerning this invention uses the above-mentioned organopolysiloxane (resin A) amino-group content silane compound (B) and above-mentioned isobutylene system polymer (C) as a primer component, and consists of systems which dissolved what added the above-mentioned catalyst (D) to these in the organic solvent (E). here, usually, the inside of this primer constituent whole quantity and a component (A) should just select the amount of each primer component (A) - (C) so that a component (B) may become 0.1 - 10% 0.5 to 20% (% of the weight and the following -- the same) and a component (C) may become 0.5 - 30% It is in the inclination for the adhesive property to glass to fall if the amount of a component (A) is less than 0.5%, and for an adhesive property with a sealing material to fall if 20% is exceeded. If the amount of a component (B) is less than 0.1%, the adhesive property to various constructed members will fall, and when 10% is exceeded, it is in the inclination for storage stability to get worse. If the amount of a component (C) is less than 0.5%, the adhesive property to a sealing material and a porosity side will fall, and when 30% is exceeded, it is in the inclination for the adhesive property to a metal side to get worse. moreover, what is necessary is just to usually select the amount of a catalyst (D) in the range of the 0.1 - 10 section to the total quantity 100 section (the weight section and the following -- the same) of component (A) - (C) A proper quantity, in addition \*\* are still better if needed in the usual inorganic fillers (a fumed silica, colloidal silica, etc.), coloring agents (red ocher, titanium oxide, carbon black, color, etc.), etc.

[0012]

[Example] Next, an example and the example of comparison are given and this invention is explained more concretely. The component of number of copies shown in the manufacture following table 1 of examples 1-6 and the example 1 of comparison - 4(1) primer constituent is blended, stirring mixture is carried out, and a primer constituent is obtained. (2) The primer constituent of the above (1) is applied to various kinds of constructed members shown in the adhesive examination following table 2 with the brush, and after ordinary temperature dryness, after applying a polysiloxane system sealing material ("penguin seal 7000" by Sunstar Research Institute) so that it may become 10mm \*\*, care-of-health hardening was carried out in 20 degree-Cx seven days and in 50 degree-Cx seven days. Subsequently, the adhesive property of this sealing-material paint film is evaluated (based on a manual friction test). A result is written together to Table 2.

O : -- perfect -- adhesion \*\*: -- a part -- exfoliation x:complete exfoliation [0013]

[Table 1]

|                                  | 実 施 例 |     |     |     |    |     | 比 較 例 |    |    |    |
|----------------------------------|-------|-----|-----|-----|----|-----|-------|----|----|----|
|                                  | 1     | 2   | 3   | 4   | 5  | 6   | 1     | 2  | 3  | 4  |
| オルガノポリシロキサン樹脂(注1)                | 5     | 5   | 5   | 5   | 5  | 5   | 5     | 5  | —  | 5  |
| γ-(2-アミノエチル)<br>アミノプロピルトリメトキシシラン | 5     | 5   | 5   | 5   | 5  | 5   | 5     | 5  | 5  | 5  |
| イソブチレン系ポリマー(注2)                  | 1     | 3   | 5   | 10  | 3  | 3   | —     | —  | 10 | 5  |
| ジブチルスズアセチルアセテート                  | 1.5   | 1.5 | 1.5 | 1.5 | 5  | 0.5 | —     | 5  | 5  | —  |
| テトライソプロピルチタネート                   | 5     | 5   | 5   | 5   | 5  | 5   | 5     | 5  | 5  | 5  |
| イソプロピルアルコール                      | 40    | 40  | 40  | 40  | 40 | 40  | 40    | 40 | 40 | 40 |
| n-ヘキサン                           | 45    | 45  | 45  | 45  | 45 | 45  | 45    | 45 | 45 | 45 |

The inside of Table 1, and notes 1MeSi 1/2 "EPION EP103S" (molecular weight 5000 [ about ]) by 50% toluene solution notes 2 Kanegafuchi Chemical Industry Co., Ltd. of the organopolysiloxane resin of 1 % of the weight of hydroxyl-group contents which consisted of 15 mol % of 85 mol % and Me<sub>2</sub>SiO units of units

[0014]

[Table 2]

|          | 実 施 例 |   |   |   |   |   | 比 較 例 |   |   |   |
|----------|-------|---|---|---|---|---|-------|---|---|---|
|          | 1     | 2 | 3 | 4 | 5 | 6 | 1     | 2 | 3 | 4 |
| フッ素樹脂接着板 | △     | ○ | ○ | ○ | ○ | ○ | △     | △ | × | △ |
| アルミニウム板  | ○     | ○ | ○ | △ | ○ | ○ | ○     | ○ | × | ○ |
| モルタル板    | △     | ○ | ○ | ○ | ○ | △ | ×     | × | ○ | × |
| フロートガラス板 | ○     | ○ | ○ | ○ | ○ | ○ | ○     | ○ | ○ | ○ |

[0015]

[Effect of the Invention] Although in the case of examples 1-6 (this invention) four sorts of constructed members are received and an adhesive property also with a temporary gap is acquired from the result of Table 2 It is admitted that the adhesive property to a mortar board (porosity side) will get worse if isobutylene system polymer deviates from this primer combination (examples 1 and 2 of comparison), and the adhesive property to a paint board or an aluminum plate will get worse if an organopolysiloxane resin deviates (example 3 of comparison), and the adhesive property to a mortar board will get worse if a tin (IV) compound deviates (example 4 of comparison). In addition, the primer constituent of this invention does not need to say that it can be used also as primers, such as other sealing materials, further various adhesives, a paint, and a coating material, in addition to this, although the usefulness is mainly looked at by application to the polyisobutylene system sealing material for construction.

---

[Translation done.]